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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,835	10/22/2003	Susumu Ninomiya	016910-0501	4242
22428 7590 03/29/2007 FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			EXAMINER MORILLO, JANELLE COMBS	
			ART UNIT	PAPER NUMBER
			1742	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/29/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/689,835

Applicant(s)

NINOMIYA, SUSUMU

Examiner

Janelle Combs-Morillo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 1/12/2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,6,12-28,32 and 36 is/are pending in the application.
- 4a) Of the above claim(s) 13-28,32 and 36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,6 and 12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kemper (US 4,030,947) in view of "Aluminum and Aluminum Alloys" p 321.

Concerning process claim 1, Kemper teaches a method of heat treating an aluminum alloy (column 4 line 45) by solution heat treating in a fluid media such as molten salt (column 3 lines 17-18, 30, 65), followed by quenching in a fluid quenching media, such as molten salt (column 3 lines 35-36, 65) optionally diluted with water (Table 1) and maintained at a temperature of 350°F (177°C, column 6 line 67), followed by artificially aging at 250°F (column 7 line 23). Kemper teaches said molten salt media can be sodium nitrate, potassium nitrate, mixtures of said salts (column 3 lines 65-67) at typically temperatures of 750-1000°F (column 2 lines 20-22, 399-538°C), which substantially overlaps the presently claimed 1<sup>st</sup> temperature minimum. Kemper teaches cooling to 177°C, but does not mention the quenching/cooling temperature suppresses growth of a GP Zone while in the solid solution state. However, because said temperature overlaps the instantly claimed temperature range of <200 °C, said GP Zones are held to be inherently suppressed.

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Kemper does not specify cleaning or further cooling with water (after cooling down to 350°F in said salt bath), however, “Aluminum and Aluminum Alloys” teaches at p 321 that salt baths/furnaces are efficient at heating and cooling, but salt residue must be rinsed with water after quenching in order to prevent corrosion (p 321, 3<sup>rd</sup> column). It would have been obvious to one of ordinary skill in the art to rinse the salt residue after cooling down to 350°F in said salt bath, with water (which would cool said higher temperature alloy) in order to prevent corrosion, substantially as taught by “Aluminum and Aluminum Alloys”.

Concerning claim 6, though Kemper does not mention the lattice defect or the miniaturization of the crystal structure, because Kemper teaches a substantially identical process as presently claimed, then said grating defect and miniaturization of the crystal structure are held to be inherently present.

3. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kemper and “Aluminum and Aluminum Alloys” further in view of Reimann (US 3,947,297).

Neither Kemper nor “Aluminum and Aluminum Alloys” mention rolling after aging. However, Reimann teaches that cold working by rolling (column 2 line22) after aging achieves excellent mechanical properties (Table II). It would have been obvious to one of ordinary skill in the art to roll the alloy taught by Kemper and “Aluminum and Aluminum Alloys” after aging, because Reimann teaches that said rolling after aging achieves excellent mechanical properties (Table II).

#### ***Response to Amendment***

4. In the response filed on January 12, 2007 applicant amended claims 1, 6, and 12. Claims 1, 6, 12-28, 32, 36 are currently pending, claims 13-28, 32, 36 are withdrawn from consideration.

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5. Applicant's argument that the present invention is allowable over the prior art of record because Kemper fails to disclose or suggest heating the nonferrous metal alloy to 450-530°C by a first liquid metal sodium, followed by cooling to a temperature <200°C in a second liquid metal sodium has not been found persuasive. As stated in the rejection above, Kemper teaches heating in a molten salt media (which comprises liquid metal sodium) to temperatures of 399-538°C followed by cooling to 177°C in molten salt media.

### *Conclusion*

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs-Morillo whose telephone number is (571) 272-1240. The examiner can normally be reached on 8:30 am- 6:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCM

March 21, 2007

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